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ABSTRACT

The Building Blocks to Colorado's Content Standards were developed to connect early childhood education to the K-12 content standards, to advocate for appropriate teaching strategies for preschool children, and to support awareness and understanding of early childhood foundational skills among parents and teachers. Five sets of building blocks are being developed, in the areas of science, social skills, the arts, reading and writing, and mathematics. This document is comprised of the reading and writing and the mathematics sets of building blocks. Both sets begin with an introduction summarizing research findings on the connection between quality early childhood programs and later academic, social, and emotional success. The reading and writing building blocks continue with a list of recommended teaching practices from the joint position statement of the International Reading Association and the National Association for the Education of Young Children. The mathematics building blocks continue with a discussion of mathematical literacy. Both sets of building blocks follow with a list of the relevant Colorado Content Standards for the K-12 system, followed by a more detailed description of each standard. This description is coupled with an Early Childhood Foundation for each standard--statements that reflect the types of experiences and interactions preschoolers need in order to develop the foundation for attaining the standards. Each individual standard is then broken down into three sections: (1) "building blocks for learning," describing skills appropriate for preschoolers, indicators of the early childhood curriculum that can be used as a guide in creating learning experiences and individualized plans for young children; (2) "steps for getting there," examples of interactions and experiences necessary for

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acquiring the building blocks, including descriptions of the adult's role as a facilitator of learning and suggestions for appropriate materials; and (3) examples of activities in which young children are engaged. The reading and writing building blocks section ends with a 13-item bibliography. The mathematics building blocks section ends with a 17-item bibliography and a list of 18 books for children. (KB)

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Colorado Department of Education

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BUILDING BLOCKS

to Colorado's Content Standards

Reading & Writing

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Introduction

We know more now than we have ever known before about the importance of the early years in a child's development. Research on brain development has demonstrated the phenomenal pace at which learning takes place from the moment we are born. We also know that poverty, illness or special learning needs can have a dramatic impact on a young child's ability to learn.

Recent studies like The Carolina Abecedarian Project and the Cost, Quality and Outcomes Study have documented the direct connection between quality early childhood programs and later academic, social and emotional success.

*From the executive summary of the **Abecedarian study**, October 1999:*

- The Abecedarian study provides scientific evidence that early childhood education significantly improves the scholastic success and educational attainments of poor children even into early adulthood.
- Reading achievement scores were consistently higher for individuals with early intervention and the effects remained significant from primary school through age 21. Mathematics achievement showed a pattern similar to that for reading.

*From the executive summary of the **Cost, Quality and Outcomes study**, June 1999:*

- Child Care quality was related to basic cognitive skills (language and math) and children's behavioral skills in the classroom (thinking/attention skills, sociability, problem behaviors, and peer relations), both of which are important factors in children's ability to take advantage of the opportunities available in school.
- Children who have traditionally been at risk of not doing well in school are affected more by the quality of [early childhood] experiences than other children.

National and local attention has focused closely on insuring that our school systems provide every child with the opportunity to achieve the highest standards possible. Policy makers and the general public have begun to ask questions about what is happening for children before they enter kindergarten and the first grade. What can be done to increase a child's chances for success? Can early learning experiences affect a child's ability to competently read, write, and do math? Can a child at play really be learning?

This document takes what we know about a child's early years and uses that knowledge to describe the building blocks necessary to give our children the greatest chance of success throughout their lives. If you are a teacher, parent, child care provider, elected official or anyone else concerned with children we hope you will take time to read what is here and let us know what you think.

Rationale

The Building Blocks to Colorado's Content Standards were developed for multiple purposes.

- **Connection of early childhood education to the K-12 Content Standards:** Early activities in which young children engage need to be recognized as part of the kindergarten-12th grade continuum. Young children are capable learners and adults in their environments should have high expectations for them. The activities referenced in this document are examples of experiences *appropriate for young children* that will lay the foundation for later accomplishment of content standards.

- **Advocacy for appropriate teaching strategies:** Young children learn through active exploration. The environment and interactions with peers and adults are important components reflected in this document, which support active learning. Adults who work with young children need to grow in their understanding and knowledge of appropriate early learning which occurs through action and interaction rather than through teaching practices suited for older children. They can then begin to explain this to parents and administrators, which will lead to effective early childhood advocacy in the community as a whole.

- **Tool to support awareness and understanding of early childhood foundational skills: parents and teachers in various early childhood settings can use this document.** Many of these adults realize the importance of laying the foundation for literacy, numeracy, science, social skills and the arts but are unsure of how to accomplish this. The Building Blocks can provide specific examples of what needs to be achieved and how it might look in an early childhood setting.

How to use the Building Blocks

The Building Blocks address literacy (reading and writing), math, science, social skills and the arts. Each section begins with a list of the Colorado Content Standards for the K-12 system, followed by a more detailed description of each standard. This is coupled with an Early Childhood Foundation for each standard--statements that reflect the types of experiences and interactions preschool learners need to develop the foundation for attaining the standards (see shaded box). The term "preschool learner" refers to any young child, ages 2 1/2 - 5, regardless of whether the child is in an early childhood setting or at home. The term "adult" refers to any adult who has interactions with the child whether that person is a teacher, child care provider or family member. The term "environment" refers to any place where young children might be--

Each individual standard is broken down into 3 sections: Building Blocks for Learning, Steps for Getting There and Examples.

Building Blocks for Learning: These statements describe skills appropriate for preschool learners. They are the indicators of the early childhood curriculum, which can be used as a guide for the adult in creating learning experiences and individualized plans for young children. Special educators who are required to tie goals and objectives from a child's Individualized Education Plan (IEP) to state content standards can also reference them.

Steps for Getting There: These statements are examples of interactions and experiences necessary for young children in acquiring the Building Blocks. Each section contains statements of the adult's role as a facilitator/*teacher* of learning. It also contains suggestions for materials to include in the child's environment. These are not all inclusive but rather a guide that will assist the young child in preparation for success with the K-12 Content Standards.

Examples: The scenario listed for each Building Block is intended to provide a description of an activity in which the children are engaged. These activities planned by the child and teacher should reflect the interest and needs of young learners.

Recommended Teaching Practices

From the Joint Position Statement of the International Reading Association (IRA) & The National Association for the Education of Young Children (NAEYC)

During the infant and toddler years:

Children need relationships with caring adults who engage in many one-on-one, face-to-face interactions with them to support their oral language development and lay the foundation for later literacy learning. Important experiences and teaching behaviors include but are not limited to:

- Talking to babies and toddlers with simple language, frequent eye contact, and responsiveness to children's cues and language attempts,
- Frequently playing with, talking to, singing to, and doing fingerplays with very young children,
- Sharing cardboard books with babies and frequently reading to toddlers on the adult's lap or together with one or two other children, and
- Providing simple art materials such as crayons, markers, and large paper for toddlers to explore and manipulate.

During the preschool years:

Young children need developmentally appropriate experiences and teaching to support literacy learning. These include but are not limited to:

- Positive, nurturing relationships with adults who engage in responsive conversations with individual children, model reading and writing behavior, and foster children's interest in and enjoyment of reading and writing,
- Print-rich environments that provide opportunities and tools for children to see and use written language for a variety of purposes, with adults drawing children's attention to specific letters and words,
- Adults' daily reading of high-quality books to individual children or small groups, including books that positively reflect children's identity, home language, and culture,

- Opportunities for children to talk about what is read and to focus on the sounds and parts of language as well as the meaning,
- Teaching strategies and experiences that develop phonemic awareness, such as songs, fingerplays, games, poems, and stories,
- Opportunities to engage in play that incorporates literacy tools, such as writing grocery lists in dramatic play, making signs in block building, and using icons and words in exploring a computer game, and
- Firsthand experiences that expand children's vocabulary, such as trips in the community and exposure to various tools, objects and materials.

COLORADO STATE STANDARD 1: Students read and understand a variety of materials.

In order to meet this K-12 standard, K-12 students will:

1.1 Use comprehension skills (such as previewing, predicting, inferring, comparing and contrasting, re-reading and self-monitoring, summarizing, identifying the author's purpose, determining the main idea, and applying knowledge of foreshadowing, metaphor, simile, symbolism, and other figures of speech);

1.2 Make connections between their reading and what they already know, and identify what they need to know about a topic before reading about it;

1.3 Adjust reading strategies for different purposes such as reading carefully, idea by idea; skimming and scanning; fitting materials into an organizational pattern, such as reading a novel chronologically; finding information to support particular ideas; and finding the sequence of steps in a technical publication;

1.4 Use word recognition skills and resources such as phonics, context clues, picture clues, word origins, and word order clues; reference guides; roots, prefixes, and suffixes of words for comprehension; and

1.5 Use information from their reading to increase vocabulary and enhance language usage.

Early Childhood Foundation for Standard 1:

In building a foundation for reading and understanding a variety of materials, young children need language experiences that relate to their world and their relationships, they need opportunities to play with sounds and words, and they need to have a variety of written materials with which to interact everyday.

Learning to use comprehension skills begins with understanding that symbols and print convey meaning and with using oral language during broad experiences in the everyday environment. Making connections between reading and what children already know begins with experiences with a variety of books. Gaining word recognition skills begins with exposure to pictures, sounds and symbols. All of these experiences lead to young children building vocabulary and enhancing their language usage, which are the foundations for literacy development.

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Standard #1

Building Blocks for Learning	Steps for Getting There	Examples
1-A: Preschool learners hold books, turn pages and look at pictures, words and symbols.	The environment includes enough books to provide each child many opportunities to pick up books and become familiar with how they are used.	Charlie picks up his favorite book to show it to his friend. He realizes that it is upside down and quickly turns it around before beginning to turn the pages.
1-B: Preschool learners use play, pictures and illustrations, to tell and retell a story.	The adult encourages children to tell and retell stories through play activities in a variety of centers in the classroom. The environment includes props, materials and manipulatives for telling and retelling stories.	A small group of children is exploring a basket filled with fruit found in the story of *The Very Hungry Caterpillar*. Using the small plush caterpillar, Ms. Joan helps them as they take turns retelling the story of how it ate through the different fruits. Later, two of the children use flannel board pieces to retell the story again.

Building Blocks for Learning	Steps for Getting There	Examples
1-C: Preschool learners develop vocabulary to effectively express feelings and thoughts, describe experiences, interact with others and communicate their needs.	The adult frequently reads books with rich descriptive vocabulary, exploring and extending children's understanding of the meaning of new words. The adult talks with individual children often, encouraging them to express their ideas, needs and feelings.	Snow is falling during outside time and the children are scooping it up. Emily tells her friend that she wants to take a snowball inside like Peter in *The Snowy Day*. When they run to tell the teacher their plan, she says, "What do you think will happen if we take it inside?" Emily responds, "It will just go away". The teacher says, "Oh, you mean it will melt. I wonder what we could do to keep it from melting."
1-D: Preschool learners use picture clues to infer and predict what happens next in a story.	While reading individually or in small groups the adult asks children questions about stories.	Jaden's father, Mr. Baylor, is reading *Peter Rabbit* with Jaden and two other children. He points to Peter hiding in the watering can and asks, "What do you think is going to happen?"

Building Blocks for Learning	Steps for Getting There	Examples
1-E: Preschool learners gain information through listening experiences with adults or peers who speak and/or read.	The adult facilitates opportunities for young children to engage in one-on-one conversations and activities as well as in groups.	Becky brings a collection of seashells to school after visiting Ocean Journey. She begins to tell Tommy about the seashells and he asks, "How come there's nothing inside?" With Ms. McCord's support, Becky tells him about the animals that used to live inside.
1-F: Preschool learners know that pictures and print convey meaning, beginning with recognition of symbols, the written form of their own name, and familiar letters or words found in their environment.	The adult writes down the child's spoken stories, lists, and riddles. The adult demonstrates the written form of the child's name on paintings, drawings, and cubbies. The adult rereads the child's spoken words that have been written through dictated stories, lists, and charts. The environment includes many sources of written materials, such as books, charts, labels, and signs.	The class is riding the bus to the pumpkin patch. As they come to a stop sign, Juanita says, "Look. That sign says STOP!" Ardie says, "STOP starts with an "S" Together they decide they will make STOP signs later to use with their bikes on the playground. After the field trip, Mr. Engelsohn gets a large piece of paper and markers. "Let's think about our visit to the pumpkin patch. Who would like to tell me what they saw and we'll write a story."

Building Blocks for Learning	Steps for Getting There	Examples
1-G: Preschool learners begin to become phonemically aware—the ability to hear separate sounds. They're learning that • speech is composed of individual sounds, • that words are composed of syllables and sounds, • that some words rhyme, and • that sounds can be manipulated.	The adult plans activities and interacts so as to draw attention to the phonemes (the smallest unit of speech) in spoken words. The adult promotes syllable-sound awareness by clapping or tapping out the syllables of words or slowly "sounding out" words. The adult heightens the child's awareness and attention to sounds by providing opportunities for children to experiment and play with sounds through singing songs, rhyming, creating nonsense words, and moving to music. The environment includes rhythm instruments, children's music and movement tapes, and a center where children may listen to a variety of story and sound tapes.	Patrick is in the listening center playing a cassette tape with different environmental sounds. With each sound he hears, he points to the picture in the accompanying book. "That's a car horn honking," Patrick says. "Honking-bonking-conking-tronking!". Several children are saying the letters of their names while their teacher, Juliette, writes them on their watercolor paintings. "T for Tammy?" says one child. "That's my letter. T-e-r. Terrence."

COLORADO STATE STANDARD 2: Students write and speak for a variety of audiences and purposes.

In order to meet this K-12 standard, K-12 students will:

2.1 Write and speak for a variety of purposes such as telling stories, presenting analytical responses to literature, conveying technical information, explaining concepts and procedures, and persuading;

2.2 Write and speak for audiences such as peers, teachers, and community;

2.3 Plan, draft, revise, proofread, and edit written communication;

2.4 Use a variety of devices such as figurative language, symbolism, dialect, and precise vocabulary to convey meaning;

2.5 Organize written and oral presentations using strategies such as lists, outlining, cause and effect relationships, comparison/contrast, problem/solution, and narration; and

2.6 Use handwriting and, at the most appropriate time, word processing to produce a product that is legible.

Early Childhood Foundation for Standard 2:

In building a foundation for writing and speaking for a variety of purposes and audiences, young children need many opportunities to communicate their ideas to attentive listeners, both adults and children. They need to hear language being used for different purposes; and they need an environment filled with varied examples of symbols and written language.

Learning to tell stories and convey information begins with early conversations and an understanding that words have meaning. Learning to write for and speak with others begins with families, friends, and teachers. Young children use words to help adults understand their needs, recount events, enter into and participate in play with others, create imaginative stories, ask questions, express and understand feelings, and solve problems.

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Standard #2

Building Blocks for Learning	Steps for Getting There	Examples
2-A: Preschool learners use spoken language for a variety of purposes.	The adult talks with children frequently, encouraging them to share their experiences and ideas and listening attentively to their contributions. The adult facilitates the use of words between children to express ideas, desires, feelings, and to resolve conflicts. The adult provides opportunities, including costume materials and props, for creative dramatic play and for telling and acting out stories. The classroom environment provides a variety of play centers that encourage children to interact and communicate with one another.	Alyssa enters preschool in the morning and calls out a greeting to her teacher and friends, "Good Morning," echoing her mother. She tells her teacher, "On the way to school we saw two rabbits, and they didn't see us." Alyssa approaches a group of children in the dress-up area and asks, "What're you playing?" When they answer "Spaceship", she asks, "Can I play too?" She then offers her ideas, "I'm the princess who drives the spaceship to the toystore."

Building Blocks for Learning	Steps for Getting There	Examples
2-B: Preschool learners use symbols for communication and for enjoyment.	The adult creates opportunities for children to make symbols and word labels in response to their needs and interests. The environment includes books and writing tools, from crayons to computers, in each area of play. The classroom environment provides opportunities for children to interpret the meaning of words and symbols, including pictures of toys on the shelves, photos of children, and labels on materials and areas.	Casey pulls a checkbook out of a purse in the dress-up area. She writes a series of circles and "x's", and says, "This says Miss Nan gets $100."
2-C: Preschool learners use pictures and symbols as a representation for oral language.	The adult provides opportunities for the children to record their thoughts and stories by having children draw, and by writing words that the children dictate to them.	During a "choice time", Hondo draws a picture of his family driving home with their new puppy. He "tells the story" to the adult who writes the words he says and reads them back to him.

Building Blocks for Learning	Steps for Getting There	Examples
2-D: Preschool learners participate in activities that are representative of their own culture and others through songs, nursery rhymes, dramatic activities, storytelling, and poetry.	The adult provides a rich variety and frequent repetition of songs, poems, finger plays, and storytelling, which encourage the children's participation and exposes them to many cultures.	Shelby's mother, a Korean-American, visits a preschool and teaches the children a singing game she played as a child using little bags filled with rice. The children learn the Korean words and look at traditional clothing.
2-E: Preschool learners develop increasingly complex and abstract use of language.	The adult consciously models use of specific vocabulary orally and in symbols and writing. He or she creates opportunities for children to learn to use and recognize precise vocabulary that relates to math, science, art, and social experiences.	On a trip to a pumpkin farm, the farmer talks to the children about planting, using words like tractor, hoe, growing season, and fertilizer. Later that week, Marianna uses the toy garden hoe in the sand and tells another child to "Get the fertilizer".

COLORADO STATE STANDARD 3: Students write and speak using conventional grammar, usage, sentence structure, punctuation, capitalization, and spelling.

In order to meet this K-12 standard, K-12 students will:

3.1 Know and use correct grammar in speaking and writing;
3.2 Apply correct usage in speaking and writing;
3.3 Use correct sentence structure in writing; and
3.4 Demonstrate punctuation, capitalization, and spelling.

Early Childhood Foundation for Standard 3:

In building a foundation for writing and speaking using conventional grammar, usage and sentence structure, punctuation, capitalization, and spelling, young children need many opportunities to express themselves in a variety of ways. They need to hear adults speaking appropriately and using questions, exclamatory statements, and humor. Children need to see examples of grammatical conventions used in everyday life, such as those found on cereal boxes, newspapers, a family letter, chart of daily schedule, and in books.

Learning to speak and write correctly begins with opportunities to engage in conversations with their families, other young children, and adults. Children have the opportunity to experiment with using symbols, letters, and a variety of writing materials. The children's environment offers consistent, daily examples of spoken and written language that serve as models for the children's own language development.

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Standard #3

Building Blocks for Learning	Steps for Getting There	Examples
3-A: Preschool learners begin to experiment with basic writing conventions such as grasp, body and paper positioning, and writing progression.	The adult provides opportunities for children to develop fine motor skills, which support grasp—using tongs, play doh, spray bottles, tweezers, and small objects in art projects. The adult provides children with opportunities to follow a progression in writing: • Pictures and scribbles • Letter-like forms • Letters from names and the environment • Strings of letters • One letter (first sound) to represent a word. The classroom environment provides an easily accessible writing center, filled with a wide variety of materials— markers, pens, pencils, crayons; paper of different shapes, sizes, textures, as well as envelopes, cards, sticky notes, and postcards; stamps, checkbooks, and receipt pads. Similar materials are available in each center throughout the room.	Jessie and Holly are playing in an area that is set up like a grocery store. Holly discovers the pad of paper and markers the adult has provided. "Look! We can use these to make a grocery list." Next she draws squiggles down the paper as she names milk, cookies, and grapes.

Building Blocks for Learning	Steps for Getting There	Examples
3-B: Preschool learners become aware of grammar and punctuation through listening to and experimenting with oral language.	The adult talks, tells stories and reads books with exaggerated expression.	Sitting on the floor with a group of children, Mr. Chavez begins to chant "Going on a Bear Hunt". He models varied tones, inflections and emotions through his voice. Mr. Chavez adds rhythmic gestures to compliment the words of the chant. The children respond with excited animation.
3-C: Preschool learners become aware of grammar and punctuation through exposure to written language.	The adult reads books with exaggerated expression and occasionally shows and talks about punctuation marks. The adult maximizes opportunities for modeling written punctuation and grammar by writing stories about incidental events (i.e. the wind slamming a door) that occur in the environment and by using correct punctuation while taking child's dictation.	It is center time at Spice Canyon Preschool and the children are busily engaged in activities. Suddenly, the sky darkens and the rain turns into hail. The sound of the hail on the roof of the modular building is deafening. Some children leave their activities and flock to the teacher who is in the library corner. Mrs. Havener senses their excitement and, as the hail diminishes, she records their comments including the appropriate punctuation marks. "What was that noise? It was so loud! I was scared!"

Building Blocks for Learning	Steps for Getting There	Examples
3-D: Preschool learners begin to associate sounds with the written letter.	The adult occasionally breaks down words into phonemes when reading and/or when a child asks how to spell a word.	Kyle is designing a menu with art materials. He asks an adult how to spell "hot dog." The adult sounds out the word, while telling Kyle which letters to write.

COLORADO STATE STANDARD 4: Students apply thinking skills to their reading, writing, speaking, listening, and viewing.

In order to meet this K-12 standard, K-12 students will:

4.1 Make predictions, analyze, draw conclusions, and discriminate between fact and opinion in writing, reading, speaking, listening, and viewing;

4.2 Use reading, writing, speaking, listening, and viewing to define and solve problems;

4.3 Recognize, express, and defend points of view orally and in writing;

4.4 Identify the purpose, perspective, and historical and cultural influences of a speaker, author, or director; and

4.5 Evaluate the reliability, accuracy, and relevancy of information.

Early Childhood Foundation for Standard 4:

In building a foundation for applying thinking skills to their reading, writing, speaking, listening, and viewing, young children need exposure to good children's literature. They need opportunities to discuss and solve problems from stories and in real life. Children need opportunities to use their imagination to create their own stories through play.

Learning to make predictions, analyze, draw conclusions, and discriminate between fact and opinion begins with active play experiences. Children solve problems in their play, make predictions about events that occur, and learn by interacting with real objects, books, toys, games, and other children. Open-ended activities and conversations with an interested adult offer children opportunities to solve problems and express their point of view.

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Standard #4

Building Blocks for Learning	Steps for Getting There	Examples
4-A: Preschool learners begin to compare, predict actions, and draw conclusions through everyday experiences and play.	The adult provides hands-on learning activities that encourage prediction, reflection, and evaluation, including science experiments and cooking activities. The adult talks with children about their play in ways that encourages them to make new connections and expands their thinking about the activity. The environment contains a variety of manipulative objects including pattern and building blocks, puzzles, sorting toys, math manipulatives.	Ashley is playing with miniature pigs and a house built of "bricks" (legos). She fits in two pigs, then three and tries various ways to add more so that they will all be able to stand up. " I wonder if there's another way to fit the pigs in your house," says her mother as she stops by to observe.

Building Blocks for Learning	Steps for Getting There	Examples
4-B: Through exposure to high quality children's literature, preschool learners predict logical next steps in a story, ask questions about stories and dramatize stories.	The adult reads predictable books many times to help children recognize predictable patterns in the story sequence. The adult encourages children to ask questions throughout daily activities. The environment contains quality, age-appropriate children's books found in a reading center as well as many other learning centers. The environment includes dramatic play props that link to the stories that are read and are rotated on an ongoing basis such as furniture (table, chair, crib, store dividers), male and female clothes (hats, shoes, material, costumes) and props (dolls, dishes, cash register).	A small group of children were baking muffins with Ms. Hepp. She says, "Who will help me measure the flour?" "Not I!" said Stan. "Not I!" said Amy. "Not I!" said Ardie. "Then I'll do it myself!" said Ms. Hepp. The children laughed as they recalled the story of the *Little Red Hen.* The adult has finished reading the story *Caps for Sale.* When the children go out to the playground, they find a box filled with various caps and hats, a "tree"-step ladder, and small pieces of rope for monkey tails. Young Mario talks about the monkeys in the book as he shakes his fist and stamps his feet.

Building Blocks for Learning	Steps for Getting There	Examples
4-C: Preschool learners interpret and convey meaning through nonverbal communication.	The adult provides opportunities for children to interpret facial expressions, voice tones, and gestures of others (peers, characters in books, photographs) and to imitate these. The environment contains images of people and story characters of differing ages and nationalities who are conveying varied emotions.	Kathleen sees Alex crying. She looks concerned and tries to comfort him. The adult says, "You look worried about Alex. Are you wondering why he's crying?" Sophia had finished reading *Where The Wild Things Are* and the children were talking about it. Colin says, "Max looks lonely. He missed his mom. Sometimes I miss my mom, too."
4-D: Preschool learners recognize that different words and different languages have meaning and value.	The adult provides opportunities for children to experiment with different words with the same meaning (synonyms) and with words from other languages. The classroom environment has varied books filled with rich, appropriate vocabulary as well as books in languages representing the cultures of the children in the class.	As their day begins, the children in Mrs. Gray's family child care home sing a brief "Hello" song. Sometimes Mrs. Gray talks with the children about the different ways to greet others—"Hi", "Howdy", "How ya' doing?", "Hola", "Good morning", or "Guten tag".

Building Blocks for Learning	Steps for Getting There	Examples
4-E: Preschool learners ask relevant questions and make thoughtful comments.	The adult encourages children to ask and answer questions beginning with who, what, where, why and when during informal and formal discussions with individuals or groups. The environment offers materials in a way that intrigues and engages children so that they will begin to ask questions and comment on the materials.	Sylvia, an adult working with children of various ages, has covered a new classroom poster with pieces of construction paper that create a "puzzle". Each day Sylvia removes one "puzzle piece" to reveal a portion of the poster. Throughout the day the children talk about what has been revealed and what the poster might look like when all of the "puzzle pieces" have been removed. Brian sets out a can of playdoh, some twigs, pieces of colored cellophane, and a few other items on a clear, plexiglass surface. He gives the children no directions but comments, asks questions, and encourages others to do the same as they begin to play with the objects.

COLORADO STATE STANDARD 5: Students read to locate, select, and make use of relevant information from a variety of media, reference, and technological sources.

In order to meet this K-12 standard, K-12 students will:

5.1 Select relevant material for reading, writing, and speaking purposes;

5.2 Understand the structure, organization, and use of various media, reference, and technological sources as they select information for their reading and writing;

5.3 Paraphrase, summarize, organize, and synthesize information;

5.4 Give credit for others' ideas, images, or information;

5.5 Use information to produce a quality product.

Early Childhood Foundation for Standard 5:

In building a foundation for reading to locate, select, and make use of relevant information, young children need experiences with books that provide information such as number or alphabet books and stories that stimulate thinking and concept development. Children need opportunities to use books when trying to find answers to questions.

Learning to select relevant material and understanding how to access resources begins with frequent interaction with books and other media in the home, school, and libraries. Learning to find, organize, and use information begins early by watching parents, siblings, and caregivers use information from books and other media. Young children learn that books and media can be used as a tool, as well as for pleasure.

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Standard #5

Building Blocks for Learning	Steps for Getting There	Examples
5-A: Preschool learners select books, tapes, and music related to things they are interested in or are learning about.	The adult talks with children and carefully observes their interests and then supports this through books, music, and materials in the classroom. The classroom environment includes books related to the materials and activities in each interest area—books about fish next to the aquarium, fine art books in the art area, cookbooks in the housekeeping area.	Mr. Liu observes that Abby is fascinated by ballet. He sets out books that address Abby's interest. He creates "word cards" that show pictures of the different ballet positions and articles of clothing, labeled with the correct names. Mr. Liu also includes a tape of "The Nutcracker" for a related music experience. He also provides props and accessories related to Abby's interest. She chooses an orange chiffon scarf, a purple tutu and the ballet slippers. Abby asks two of her friends to join her in creating a performance.

Building Blocks for Learning	Steps for Getting There	Examples
5-B: Preschool learners use a variety of media to experience stories.	The classroom environment includes a "listening center" where children can turn pages of a book while listening to a story on tape; a computer center with high-quality, age-appropriate software; and a "reading area" that contains a variety of reading materials, including children's magazines, newspapers, and books.	Janie brings a newspaper article to school with a picture of the new polar bear cubs. Ms. Nordstrom helps Janie as she shares her article with a small group of children. The children then talk about other classroom resources for learning more about polar bears (the book, *Polar Bear, Polar Bear*; documentary videotape on Alaska; a computer encyclopedia).
5-C: Preschool learners use a library to locate materials they need or ones that are of particular interest to them.	The adult takes the children to the public or school library and introduces them to how and where materials are located and used.	Mrs. White Raven sends home a list of neighborhood libraries and asks parents to take their children to get a library card and to choose a book of interest. In addition, she works with the parent committee to plan a family field trip to the local library for a "Pajama Storytime". Later in the month the children create a "library" in the play area using cardboard boxes, shelves, and index cards.

Building Blocks for Learning	Steps for Getting There	Examples
5-D: Preschool learners begin to create stories and records of events in an organized way.	The adult listens and encourages children to tell their own stories in an organized way. The adult encourages a variety of activities to extend the story. The adult keeps records of children's stories and documentation of activities related to their stories. The child has opportunities to "reread" and revisit their stories. The environment has a wide variety of games and materials that encourage sequencing.	Sharon listens intently, kneeling so that she is at Darcy' s eye level, as Darcy tells her about her camping trip. Sharon asks questions, "What happened first? And then what happened?" She suggests that Darcy share her camping trip story with others by drawing a picture, telling her story, or acting out her trip with other children in the dramatic play area.

Building Blocks for Learning	Steps for Getting There	Examples
5-E: Preschool learners begin to recognize books by their cover and to identify the beginning, middle, and end of stories and books.	The adult shows children books before reading and talks with them about the basic characteristics of the book cover. The adult provides books that have very concrete beginnings, middles, and ends and discusses this sequence with the children.	Patrick and Han Jiao are acting out one of their favorite stories. They begin to argue about the correct sequence of events. Mr. Slovich, their teacher, encourages them to talk about what happens first, what happens in the middle, and what happens at the end of the story. He then encourages both children to make a storyboard of their own. Mr. Slovich gives each child a long piece of paper divided into three sections (beginning, middle, end). He encourages them to draw pictures for each section as he writes down the words they dictate.

COLORADO STATE STANDARD 6: Students read and recognize literature as a record of human experience.

In order to meet this K-12 standard, K-12 students will:

6.1 Know and use literary terminology;

6.2 Read literature to investigate common issues and interests;

6.3 Read literature to understand places, people, events and vocabulary, both familiar and unfamiliar;

6.4 Read literature that reflects the uniqueness and integrity of the American experience;

6.5 Read classic and contemporary literature, representing various cultural and ethnic traditions from throughout the world; and

6.6 Read classic and contemporary literature of the United States about the experiences and traditions of diverse ethnic groups.

Early Childhood Foundation for Standard 6:

In building a foundation for reading and recognizing literature as a record of human experience, young children need exposure to stories that reflect experiences that are similar to, and that are different from their own. Children need to hear stories that help them understand their own feelings and their relationships with others. Children need to use a wide variety of books and other media.

Learning to know and use literary terminology begins with identifying authors, illustrators, and the parts of a book. Children begin to identify similarities and differences between characters and places in books and their own lives. Adults introduce children to literature that reflects American history, culture, and values. Developing a love of books begins with seeing the child's own and others' experiences reflected in stories.

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Standard #6

Building Blocks for Learning	Steps for Getting There	Examples
6-A: Preschool learners begin to identify the role of the "author" and the "illustrator" of books that are read to them or that they create.	The adult identifies the author, illustrator and the parts of books when reading to children. The environment contains materials for children to create their own stories and pictures in book form. The children are noted as the "author" and the "illustrator" when doing so. The classroom environment contains several books by the same author displayed together.	When reading *We Were Tired of Living in a House*, Jo states, "This book was written by Liesel Skorpen, she is the author. Doris Burn is the illustrator. She drew the pictures." Later, Jo helps the children write their names on books they have created themselves, noting that they are the "authors" and "illustrators".

Building Blocks for Learning	Steps for Getting There	Examples
6-B: Preschool learners listen, respond to, and discuss a variety of literature including fairy tales, folk tales, legends and myths, rhymes and poems, fiction and non-fiction.	The adult supports the child's ability to listen attentively and to share back what, specifically, has moved them or sparked their imagination. The adult frequently reads to children individually and in small groups, and engages the children in conversations about what they have read. The classroom environment contains a wide variety of age- appropriate literature, both in the literacy center and in other areas of the classroom that are available at all times.	Mrs. Howitson, the librarian, reads some poems from Robert Lewis Stevenson's *Poems for the Very Young*. The children especially like "I Have a Little Shadow". They talk with Mrs. Howitson about the shadows they have seen, explore shadows out on the playground. Later, they experiment with shadow puppets in the classroom, discovering how shadows are made.

Building Blocks for Learning	Steps for Getting There	Examples
6-C: Preschool learners begin to use new vocabulary from literature in another context.	The adult listens for, and acknowledges, a child's attempts to use new words from stories/books in other contexts. The classroom environment is organized to support children's literacy development by using signs, name charts, picture schedules, and labels on materials and centers.	Mr. Monet, a local artist, reads a book about colors that introduces words such as magenta, turquoise, and chartreuse. Later in the day, several children experiment with mixing colors and making their own color wheels in the art area identifying "new" colors by name and then labeling them.
6-D: Preschool learners begin to understand a variety of cultures, traditions, and histories, through listening to stories and participating in activities.	The classroom environment is reflective of the cultures, ethnicity, race and family traditions of the children who participate in the program and live in their community.	Early in July, Lawrence reads the children several stories about American Independence Day. Lawrence and the children talk about the many ways their families celebrate this holiday. When Payten's mom, Mrs. Gonzales, visits the group she reads *Big Moon Tortilla* and makes tortillas with the children.

Building Blocks for Learning	Steps for Getting There	Examples
6-E: Preschool learners begin to make connections between books or stories and their own experiences and classroom learning.	The classroom environment has realistic materials in the dramatic play area, which reflect the children's lives while exposing them to print materials.	The children love Raffi's song, *The Grocery Store*. In the dramatic play area there is a "grocery store center" that includes empty cereal boxes and cans, receipt pads, price tags, name tags, a cash register, shopping lists and signs detailing the "hours" the store is open and who is currently "working" in the store. Miss Jackie helps the children explore and use the materials.
6-F: Preschool learners relate their own experiences and feelings with those of a character in a book.	The adult suggests and provides books that might be of interest to the children. The environment has a variety of books that address children's everyday experiences and feelings.	Hannah reads the book, Tough Boris, to an individual child. She then asks, "Why do you think Tough Boris cried when his parrot died? Are there things that make you sad?" Miss Sandy knows that David is terrified of thunderstorms. She reads the story, *Thundercake* with David several times, talking with him about how the character in the story feels. When David asks, Miss Sandy loans the book to David and his parents to read together at home.

Bibliography and Resource List

Many educators have worked diligently to create content standards for Early Childhood. We are grateful we were able to refer to these documents while developing ***Building Blocks to Colorado's Content Standards***. We also utilized many of the following books as references and guides. We hope you will find these resources equally useful in your own work with young children.

Early Childhood Content Standards Documents:

El Paso District 11 Early Childhood Content Standards

Early Learning Task Force Preschool Education/Harrison District #2-Colorado. (1992)

Jefferson County Early Childhood Content Standards

Michigan State Board of Education Early Childhood Education, Parenting and Comprehensive School Health Unit (1992). *Early Childhood Standards of Quality for Prekindergarten through Second Grade.*

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BUILDING BLOCKS

to Colorado's Content Standards

Mathematics

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Building Blocks to Colorado's Content Standards

Introduction

We know more now than we have ever known before about the importance of the early years in a child's development. Research on brain development has demonstrated the phenomenal pace at which learning takes place from the moment we are born. We also know that poverty; illness or special learning needs can have a dramatic impact on a young child's ability to learn.

Recent studies like The Carolina Abecedarian Project and the Cost, Quality and Outcomes Study have documented the direct connection between quality early childhood programs and later academic, social and emotional success.

From the executive summary of the Abecedarian study, October 1999:

- The Abecedarian study provides scientific evidence that early childhood education significantly improves the scholastic success and educational attainments of poor children even into early adulthood.
- Reading achievement scores were consistently higher for individuals with early intervention and the effects remained significant from primary school through age 21. Mathematics achievement showed a pattern similar to that for reading.

From the executive summary of the Cost, Quality and Outcomes study, June 1999:

- Child Care quality was related to basic cognitive skills (language and math) and children's behavioral skills in the classroom (thinking/attention skills, sociability, problem behaviors, and peer relations), both of which are important factors in children's ability to take advantage of the opportunities available in school.
- Children who have traditionally been at risk of not doing well in school are affected more by the quality of [early childhood] experiences than other children.

National and local attention has focused closely on insuring that our school systems provide every child with the opportunity to achieve the highest standards possible. Policy makers and the general public have begun to ask questions about what is happening for children before they enter kindergarten and the first grade. What can be done to increase a child's chances for success? Can early learning experiences affect a child's ability to competently read, write, and do math? Can a child at play really be learning?

This document takes what we know about a child's early years and uses that knowledge to describe the building blocks necessary to give our children the greatest chance of success throughout their lives. If you are a teacher, parent, child care provider, elected official or anyone else concerned with children we hope you will take time to read what is here and let us know what you think.

Rationale

The Building Blocks to Colorado's Content Standards were developed for multiple purposes.

- **Connection of early childhood education to the K-12 Content Standards:** Early activities in which young children engage need to be recognized as part of the kindergarten-12th grade continuum. Young children are capable learners and adults in their environments should have high expectations for them. The activities referenced in this document are examples of experiences *appropriate for young children* that will lay the foundation for later accomplishment of content standards.

- **Advocacy for appropriate teaching strategies:** Young children learn through active exploration. The environment and interactions with peers and adults are important components reflected in this document, which support active learning. Adults who work with young children need to grow in their understanding and knowledge of appropriate early learning which occurs through action and interaction rather than through teaching practices suited for older children. They can then begin to explain this to parents and administrators, which will lead to effective early childhood advocacy in the community as a whole.

- **Tool to support awareness and understanding of early childhood foundational skills: parents and teachers in various early childhood settings can use this document.** Many of these adults realize the importance of laying the foundation for literacy, numeracy, science, social skills and the arts but are unsure of how to accomplish this. The Building Blocks can provide specific examples of what needs to be achieved and how it might look in an early childhood setting.

How to use the Building Blocks

The Building Blocks address mathematics (numeracy), reading and writing (literacy), science, and the arts. Each section begins with a list of the Colorado Content Standards for the K-12 system, followed by a more detailed description of each standard. This is coupled with an Early Childhood Foundation for each standard--statements that reflect the types of experiences and interactions preschool learners need to develop the foundation for attaining the standards (see shaded box). The term "preschool learner" refers to any young child, ages 2 1/2 - 5, regardless of whether the child is in an early childhood setting or at home. The term "adult" refers to any adult who has interactions with the child whether that person is a teacher, child care provider or family member. The term "environment" refers to any place where young children might be--

Each individual standard is broken down into 3 sections: Building Blocks for Learning, Steps for Getting There and Examples.

Building Blocks for Learning: These statements describe skills appropriate for preschool learners. They are the indicators of the early childhood curriculum, which can be used as a guide for the adult in creating learning experiences and individualized plans for young children. Special educators who are required to tie goals and objectives from a child's Individualized Education Plan (IEP) to state content standards can also reference them.

Steps for Getting There: These statements are examples of interactions and experiences necessary for young children in acquiring the Building Blocks. Each section contains statements of the adult's role as a facilitator/teacher of learning. It also contains suggestions for materials to include in the child's environment. These are not all inclusive but rather a guide that will assist the young child in preparation for success with the K-12 Content Standards.

Examples: The scenario listed for each Building Block is intended to provide a description of an activity in which the children are engaged. These activities planned by the child and teacher should reflect the interest and needs of young learners.

Developing Mathematical Literacy in the Early Childhood Years

The importance of the early years in a child's development has been well established and is broadly accepted. Most often we hear about the development of skills necessary for a child to learn to read and write. Important mathematical development occurs in young children too. Children of all ages can and do learn mathematics.

You probably have heard the term numeracy used as a partner to literacy. Numeracy is mathematical literacy that is necessary for people to navigate the mathematical situations presented in every day life. In a recent NAEYC publication " Promoting Meaningful Learning, Innovations in Educating Early Childhood Professionals", Nicola J. Yelland, Editor they state, "...we use the term Mathematical literacy rather than numeracy, because conceptualizations of numeracy are often restricted to number knowledge and skills, while mathematical literacy comprises the broad range of knowledge in number, measurement, space, chance and data, and skill needed daily for creative mathematical problem solving." In today's world there is no question that children must become mathematically literate. Basic arithmetic skills are no longer enough. Being able to understand and work with data and supporting technology is essential.

Some support for mathematical learning is intuitive, comes from real life experiences and play, and begins before children enter school. When you go shopping children learn that money has value. They learn through birthdays, holidays and weekends about the passing of time and calendars. They hear stories, songs and rhymes about numbers like the "Three Little Pigs" and "One, two buckle my shoe". From the day they notice their environment children are learning about distance, size, shape and weight.

This section of the Building Blocks is about what can be done intentionally, and proactively, to support the development of mathematical literacy. Consider the following:

- Recognizing and understanding patterns is a building block for algebra.
- Identifying simple shapes and measuring are building blocks for geometry.

- Hearing and telling stories, sharing, hide and seek, and other games are building blocks for reasoning and problem solving.

Recent work by the National Council of Teachers of Mathematics (NCTM) 2000, "Principles and Standards for School Mathematics" includes information and ideas for children, from preschool through the 12th grade, and the adults that are part of their lives. You can view the results of their work at their web site, http://nctm.org/standards/. They also collaborated with NAEYC in the production of a book, "Mathematics in the Early Years", edited by Juanita V. Copley. Both are excellent resources.

Achieving and maintaining mathematical literacy is truly a lifelong quest in our world of ever advancing technology. This document is a reminder that the journey starts early in life and an attempt to articulate what we know about our youngest learners.

COLORADO STATE STANDARD 1: Students Develop Number Sense and Use Numbers and Number Relationships in Problem-Solving Situations and Communicate the Reasoning Used in Solving These Problems.

In order to meet this K-12 standard, students will:

1.1 Construct and interpret number meanings through real-world experiences* and the use of hands-on materials;

1.2 Represent and use numbers in a variety of equivalent forms *(for example, fractions, decimals, percents, exponents*, scientific notation*)*;

1.3 Know the structure and properties of the real number system* *(for example, primes*, factors, multiples, relationships among sets of numbers)*; and

1.4 Use number sense, including estimation and mental arithmetic, to determine the reasonableness of solutions.

Early Childhood Foundation for Standard 1:

In building a foundation for the development of number sense, number relationships in problem-solving situations and communicating their reasoning, young children need interactive experiences with everyday objects, materials, and their environment. They also need opportunities to play, observe and interact with adults and peers in order to discover number relationships and develop problem-solving skills.

Learning the meaning of a number begins with hands on experience with a variety of objects found in the home, classroom and nature, as well as exposure to number vocabulary related to the child's experience. Representing and using numbers begins with exposure to written numbers and other printed symbols. Learning about the structure and properties of the real number system begins with exposure to relationships among and between sets of objects. Learning to use number sense begins with estimating quantities and describing relationships.

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Standard #1

Building Blocks for Learning	Steps for Getting There	Examples
1-A: Preschool learners gain a knowledge of quantity and of comparisons of quantity (all, some, none, fewer, more)	The environment includes different quantities of a variety of materials and math manipulatives. The adult engages in conversations with children about quantity and comparisons as they interact with materials throughout the day.	Betty and Tracy are rolling play dough into large round shapes. Betty says, "Look, I have more than you." Their mother walked by and said, "How do you know you have more?" Together, they count the shapes the girls have made.
1-B: Preschool learners begin to use the names for numbers and associate number words with collections or sets of objects counted including zero.	The environment contains objects with naturally occurring numbers and number words, such as clocks, timers, calendars, thermometers, computers, calculators, measuring cups, etc. The adult uses number words and numerals, including zero, in meaningful everyday activities. The adult uses a variety of strategies (questions, comments, counting) to prompt children to think about quantity and number words.	The children have gone for a walk, collecting items from nature. Andrew says, "I have a million rocks!" Ms. Bowers says, "A million? That IS a lot! I wonder how many Alex has?" Alex, using sign language, says, "I have five rocks!"

Standard #1

Building Blocks for Learning	Steps for Getting There	Examples
1-C: Preschool learners develop the concept of one-to-one correspondence first by moving objects (by placing one cup in front of each bear), touching or pointing to objects while using number words, progressing from inventive to accurate counting, and recognizing and matching number symbols with the appropriate amounts.	The environment contains a variety of objects that work together in a one-to-one relationship (markers and caps, cars and garages, containers with lids). The adult provides opportunities for children to pair objects, to count, and to develop and practice numerical vocabulary.	Mr. Ortiz puts placemats around the table. Maria follows, placing one cup and one napkin on each placemat. She counts, "Uno-one, dos-two, ... quatro .... no ..... tres-three."
1-D: Preschool learners begin to use numbers to predict and make realistic guesses.	The adult encourages children to make thoughtful guesses and predictions about quantity, size, distance, and time. Opportunities for children to predict can be provided in planned activities (guessing the number of jellybeans in a jar) and in naturally occurring activities (guessing how many days before the garden seeds sprout).	The children at Sunshine Family Child Care Home are playing with the building blocks. Violet says, "Let's make a road that goes all the way to the refrigerator!" Darrell says, "I don't think there are enough blocks. You need at least fifty." They begin building the road, counting as they add each block. "Twelve, thirteen, fourteen. See? I told you there wouldn't be enough! We still have a long way to go."

Standard #1

Building Blocks for Learning	Steps for Getting There	Examples
1-E: Preschool learners begin to understand that numbers always represent the same quantity, regardless of the order or physical arrangement of the objects counted.	The adult provides many daily opportunities to count and recount objects in the environment.	The children have made Ants on a Log for snack (raisins on peanut butter and celery). Christian has grouped his raisins closely together. Sammy spread his out and says, "I have more raisins." Christian looks upset. Linda helps the children count and they discover each has five. "When I spread mine out, " Christian observes, "I still have five!"

COLORADO STATE STANDARD 2: Students use Algebraic Methods to Explore, Model, and Describe Patterns and Functions Involving Numbers, Shapes, Data, and Graphs in Problem-solving Situations and Communicate the Reasoning Used in Solving These Problems.

In order to meet this K-12 standard, students will:

2.1 Identify, describe, analyze, extend, and create a wide variety of patterns in numbers, shapes, and data;
2.2 Describe patterns using mathematical language;
2.3 Solve problems and model real-world situations using patterns and functions;
2.4 Compare and contrast different types of functions; and
2.5 Describe the connections among representations of patterns and functions, including words, tables, graphs, and symbols.

Early Childhood Foundation for Standard 2:

In building the foundation for algebraic methods to explore, model and describe patterns and functions involving numbers, shapes, data, and graphs in problem-solving situations, young children need to explore an environment rich in shapes, sizes, colors, patterns, textures, sounds, and symbols. In building the foundation for communicating the reasoning used, young children need opportunities to engage regularly in math related conversations with peers and adults.

Learning to identify and describe patterns using mathematical language begins with opportunities to label, classify and sort. Learning to solve problems and model real-world situations using patterns and functions begins with physically and mentally interacting with the environment, materials, and other adults and children. Learning to describe connections between patterns and mathematical relationships (functions), including words, tables, graphs and symbols begins with opportunities for young children to recognize that math is connected to real-world everyday experiences.

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Standard #2

Building Blocks for Learning	Steps for Getting There	Examples
2-A: Preschool learners explore the attributes of objects and begin to label, classify, and sort by similar traits such as shape, color and size.	The environment includes a variety of manipulatives (parquetry blocks, unit cubes), collections (pebbles, plastic animals), dramatic play props (variety of clothing, dishes, dolls), and art materials (fabric samples, tongue depressors) in different colors, shapes and sizes to encourage classifying and sorting experiences throughout the day. The adult encourages children to describe and talk about why they have sorted, classified and ordered objects in a certain way. The adult models vocabulary when talking about attributes and characteristics of objects in the environment.	Stella decided to make a picture of her family. She gathered paper, markers, stencils, and collage materials such as yarn, fabric squares, and buttons. She used the stencils to draw the different body parts of the people (circle for heads, triangles for torsos) and added lines for arms and legs. She then decorated the people commenting as she did, "Mom has longer hair than Daddy or Seth. She is wearing blue. Daddy has yellow and Seth has green stripes."

Standard #2

Building Blocks for Learning	Steps for Getting There	Examples
2-B: Preschool learners observe and distinguish differences in groups of objects, can recognize objects arranged in a series (seriation), and begin to place objects in order through trial and error.	The environment includes objects in various sizes, color shades, textures, and tonal qualities that can be arranged in order. The adult encourages children to compare the characteristics of materials and arrange them in an order (ie: from smallest to biggest, lightest to heaviest, shortest to longest, least to most, fattest to thinnest, lightest to darkest, etc.). The adult builds on children's understanding of seriation by making changes and additions in materials (ie: varying the number of objects, the types of characteristics, and the degree of variation).	Marta is making ginger snap cookies with her Aunt Cissy. When they have baked, Marta looks at them and says, "Here's the littlest cookie, this one is for my baby sister". Marta chooses two more cookies, saying, "This one is next and it's for me. This is yours, Aunt Cissy, 'cause it's the biggest!" After Marta has arranged several cookies from smallest to largest, Aunt Cissy picks up another cookie and says, "Okay, now where do you think this one goes?"

Standard #2

Building Blocks for Learning	Steps for Getting There	Examples
2-C: Preschool learners begin to recognize, duplicate and create patterns and use them to make predictions.	The adult encourages children to create, identify, match, and describe patterns in objects, designs, pictures, movement activities and recurring events. The adult encourages the children to begin to predict what comes next in the context of a pattern or sequence of events.	Nick, Doreen, and Mrs. Koch are in the yard planting flowers. They have red and white petunias. Nick and Doreen dig a patch of dirt and decide to plant a white petunia. Nick begins to pick up another white one, when Doreen says, "No! Red goes next!" After planting a red petunia, Nick smiles and says, "Now we put a white one in. White, red, white!"
2-D: Preschool learners use words that describe sequence of events and objects as well as their rationale for organization.	The environment contains patterns and sequences that are concretely and pictorially represented. The adult helps the child recognize and describe sequences in nature, daily routines, and in stories.	Yanek's teacher has used photos to show the sequence of the daily routine. Yanek moves his wheelchair closer to "read" the pictures and says, "It's lunch time now, then it will be nap time."

Standard #2

Building Blocks for Learning	Steps for Getting There	Examples
2-E: Preschool learners begin to recognize charts and graphs as a way of collecting, organizing, recording, and describing information.	The adult engages children in many opportunities to create and understand graphs.	The Mom and Me playgroup went to the library. After reading, Red Leaf, Yellow Leaf, the children decided to collect leaves on the way home. At home, Eva suggested they look at their leaves and group the ones that look the same. She brings out a large piece of cardboard and draws columns. The children glued the leaves in the columns according to size.
2-F: Preschool learners build a vocabulary to describe attributes, classify, and group things by criteria as they explain "that things go together""	The adult describes and models a variety of ways to classify a group of concrete objects. The adult frequently uses words that describe attributes/criteria of items in a child's environment	Mr. Thompson carried plastic crates in from the discount store. "Let's use these to organize the playhouse! What things do you think should go in each of these crates?" Patti and Liz busily begin placing shoes in one and cowboy boots in another. "How did you decide what to put in here?" Mr. Thompson asked. "These are boy shoes and these are girl shoes." Liz replied.

COLORADO STATE STANDARD 3: Students Use Data Collection and Analysis, Statistics, and Probability in Problem-solving Situations and Communicate the Reasoning Used in Solving These Problems.

In order to meet this K-12 standard, students will:

3.1 Solve problems by systematically collecting, organizing, describing, and analyzing data using surveys, tables, charts, and graphs;
3.2 Make valid inferences, decisions, and arguments based on data analysis; and
3.3 Use counting techniques, experimental probability, or theoretical probability, as appropriate, to represent and solve problems involving uncertainty.

Early Childhood Foundation for Standard 3:

In building a foundation for using data collection and analysis, statistics, and probability in problem-solving situations, young children need experiences in collecting objects and information, as well as opportunities to organize, describe and graphically represent these collections. In building a foundation for communicating the reasoning and processes used in solving problems, young children need opportunities to hear, use and apply relevant vocabulary while formulating questions and possible solutions with others based on their observations and experiences.

Learning to solve problems by systematically collecting, organizing, describing, and analyzing data using surveys, table, charts, and graphs begins with understanding the purpose of these activities and how to use visual symbols to represent the data. Young children begin to make valid inferences, decisions, and arguments based on data analysis by comparing, reflecting, and discussing their observations. The concept of probability begins with opportunities for young children to make guesses and predictions about naturally occurring and planned experiences in their environment.

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Standard #3

Building Blocks for Learning	Steps for Getting There	Examples
3-A: Preschool learners collect interesting objects and information found in their home, classroom, and nature and label or describe those collections.	The environment contains various types of collections, which are attractively displayed. The environment contains a variety of materials for creating displays such as tag board, markers, sticky notes, cameras with film, and tape recorders are accessible to the children. The adult provides opportunities for children and families to create and share collections based on their interests.	A theme about socks emerged at the Roan Cliffs preschool one day when children began to compare their socks after completing their barefoot obstacle course. Their teacher sent a note home asking parents to send in a pair of silly socks to be used for matching and hanging on a clothesline. The collection included striped "elf" socks, Christmas tree socks, and socks that play music. Meg's father brought in a digital camera and took pictures of the collection and shared them with the other families.
3-B: Preschool learners begin to experiment with words that describe relationships such as more, less, most, same, fewer and none.	The adult uses comparison words such as more, less, fewer, none in natural conversation and planned activities with the children. The environment includes a wide variety of natural and purchased materials for counting, comparing and drawing conclusions about relationships.	While standing in line at the children's museum, Diego says, "Look, Uncle Nick! That line is longer than ours." "Yes, there are more people standing in that line. Let's count them while we wait," says Uncle Nick.

Standard #3

Building Blocks for Learning	Steps for Getting There	Examples
3-C: Preschool learners begin to understand that symbols may be used to represent objects and events.	The environment contains many forms of symbols including pictures, diagrams, models, and words. The adult provides children with opportunities to create and use symbols in planned activities, the environment, and throughout their daily routines.	Tim and his mom work together to make a chart for chores he can do in the morning. They choose pictures from a magazine to represent feeding the dog, making the bed and picking up toys. Each day when Tim completes one of his chores, he covers the picture with a refrigerator magnet.
3-D: Preschool learners begin to use tables, charts and graphs in a systematic manner to represent meaningful information and relationships.	The adult creates graphs to illustrate comparisons for children. The adults provide opportunities for children to create their own tables, charts and graphs in planned and spontaneous activities.	After a discussion at snack time about how children get to school each day, Mr. Dave made a chart with columns for car, bus, bike, walk, taxi, van, truck, motorcycle, and light rail. The children wrote their names or signs in one of the columns. Later that day, Monica showed the chart to her sister and said, "See? The most kids come to school on the bus!"

Standard #3

Building Blocks for Learning	Steps for Getting There	Examples
3-E: Preschool learners begin to interpret information presented in graph form.	The adult uses graphs and charts to organize and interpret information and to show relationship. The adult provides opportunities for children to create their own graphs using real objects as well as symbols.	Jakota and James have been smelling a variety of spices and herbs at a booth at the children's fair. They place a small cube with their name on it next to the jar they like the best. "Wow! Look at the tower next to the cinnamon! A lot of kids liked it!"
3-F: Preschool learners begin to make guesses or predictions based on their observations and information available to them.	The adult occasionally poses questions, which ask children to makes guesses or predictions. The adult models prediction language such as "likely, not likely, more likely or less likely".	Ms. Nivea notices that the children have built a roadway with cardboard tubes propped on two large blocks and are experimenting with which cars reach the carpet first. They have sorted the cars into two piles, the fast and the slow. Ms. Nivea asks, "Which car do you think will get to the finish line first, the small red one or the big yellow one?"
3-G: Preschool learners begin to develop and use systematic approaches to problem solving as they test out possibilities and find solutions.	The environment includes many materials which children can use to experiment and problem-solve. The adult encourages children to playfully experiment with many different ways to solve problems.	Hong discovers that there are seven different colors of plastic dinosaurs, but only six places in the egg carton he is using for sorting. "I know, I'll get the BIG egg box from the kitchen!"

COLORADO STATE STANDARD 4: Students Use Geometric Concepts, Properties, and Relationships in Problem-solving Situations and Communicate the Reasoning Used in Solving These Problems.

In order to meet this K-12 standard, students will:

4.1 Connect various physical objects with their geometric representation;
4.2 Connect mathematical concepts from across the standards with their geometric representations;
4.3 Recognize, draw, describe, and analyze geometric shapes in one, two, and three dimensions;
4.4 Make, investigate, and test conjectures about geometric ideas; and
4.5 Solve problems and model real-world situations using geometric concepts.

Early Childhood Foundation for Standard 4:

In building a foundation for using geometric concepts, properties, and relationships in problem-solving situations, young children need opportunities to actively explore the size, shape, and spatial arrangement of real objects. In communicating the reasoning used in solving these problems, children need to hear and use relevant vocabulary while interacting with adults and peers.

Learning to recognize, identify, draw, and describe shapes begins with opportunities to manipulate, play with, trace, and replicate geometric figures. Spatial reasoning begins as young children become aware of their bodies and personal space during active exploration of their physical environment and continues to develop through the manipulation of objects. Young children need opportunities to purposefully investigate and use shapes in a variety of activities to develop an understanding of geometric relationships.

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Standard #4

Building Blocks for Learning	Steps for Getting There	Examples
4-A: Preschool learners explore geometric shapes using their bodies, their hands, their eyes, and their minds.	The adult encourages children to explore materials and environment through movement and hands-on experiences The environment has enough space available to allow children to create a new environment related to their play. The environment contains materials in a variety of shapes and sizes.	Two sets of parquetry blocks are on the table. Travis is using his fingers to follow the shape of each block saying, "Look, this is a triangle". Marisa is carefully matching the shapes of the blocks to the design board. Niko enthusiastically created his own design and then uses a pencil to trace the shape. Ariana is quietly building a tower.

Standard #4

Building Blocks for Learning	Steps for Getting There	Examples
4-B: Preschool learners notice differences and begin to identify, describe, model, draw and classify geometric shapes.	The adult uses appropriate vocabulary while supporting and encouraging children to explore, manipulate, and represent geometric shapes. The environment contains a variety of geometric materials such as unit blocks, parquetry blocks, stencils and geoboards. The environment contains many materials for children to create and represent shapes. e.g.: paper, pipe cleaners, play doh, scissors, tape, wood.	Chris and Aretha are building a house out of geometric blocks. They want to draw a picture of their "house". Their Dad encourages the girls to look at the "house", identify the shapes they have used, and then recreate them on paper. The next day, Chris and Aretha use their picture to make another house, using play doh.

Standard #4

Building Blocks for Learning	Steps for Getting There	Examples
4-C: Preschool learners manipulate concrete geometric shapes and materials to create other geometric shapes.	The environment includes a variety of shapes and materials that may be connected and combined to create new shapes. The adult encourages children to experiment with combining and arranging shapes in new and more complex ways.	The neighborhood children love to go to Mr. Urigoto's home where he shows them how to fold paper in a variety of origami shapes. Mr. Urigoto helps Amy, who is blind, use her fingers to feel how the square paper is folded into a triangle to make a little hat.
4-D: Preschool learners recognize geometric shapes in their environment.	The adult names and calls attention to shapes naturally apparent in the environment	Rob takes his sisters on a walk to find circles. Alluradana finds a cup and a paper plate. Payten sees a headlight on a car and a bicycle tire. They stop for an ice cream cone. As they pay, Mckenna looks at the coins and says, "Hey! It's another circle!"

Standard #4

Building Blocks for Learning	Steps for Getting There	Examples
4-E: Preschool learners begin to understand and describe position, direction, and distance of objects and themselves using words such as here, there, in, out, over, under, next to, near and far.	The adult uses, and encourages children to use, language and physical gestures to demonstrate directional words with people and things in the environment. The adult encourages children to explore spatial relationships through activities and opportunities to move within their environments.	Sophia Katherine and Jeff are playing on the jungle gym at the park. "Look at you! You're going all the way over the top!" exclaims Michelle. Sophia Katherine laughs and says, "We are very far away from you, Mama!"
4-F: Preschool learners begin to build mental and physical maps of their own surroundings.	The adult encourages children to create representations of space by constructing models through drawing, block building or other mediums. The environment contains space and materials for creating landscapes (train tracks, houses, roadways) and maps.	Federico is quietly playing in the sandbox with his friend Tyler. They are building a steep mountain road, carefully placing boulders, trees, and houses along the way. Olivia talks with them about how their landscape reminds her of the trip they all took to the mountains last weekend.

COLORADO STATE STANDARD 5: Students Use a Variety of Tools and Techniques to Measure, Apply the Results in Problem-solving Situations, and Communicate the Reasoning Used in Solving These Problems.

In order to meet this K-12 standard, students will:

5.1 Understand and apply the attributes of length, capacity*, weight, mass, time, temperature, perimeter, area, volume, and angle measurement in problem-solving situations;
5.2 Make and use direct and indirect measurements to describe and compare real-world phenomena;
5.3 Understand the structure and use of systems of measurement;
5.4 Describe and use rates of change *(for example, temperature as it changes throughout the day, or speed as the rate of change of distance over time)* and other derived measures; and
5.5 Select appropriate units, including metric, and US customary, and tools *(for example, rulers, protractors, compasses, thermometers)* to measure to the degree of accuracy required to solve a given problem.

Early Childhood Foundation for Standard 5:

In building a foundation for using tools and techniques to measure and apply the results in problem solving situations, young children need opportunities to explore and discover measurement relationships in everyday activities and interactions. In communicating the reasoning used in solving these problems, children need to be able to talk about size, distance, and time using conventional terms.

Learning to understand and apply measurement attributes begins with the child actively describing and comparing real world phenomena in his/her own words. As young children begin to understand the structure and use of systems of measurement, they need opportunities to use actual measurement instruments, and to make direct and indirect comparisons. Understanding the concepts of how to measure change begins with observing and recognizing change that occurs in their daily life.

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Standard #5

Building Blocks for Learning	Steps for Getting There	Examples
5-A: Preschool learners show an understanding of the concept of time, beginning with the recognition of time as a sequence of events that relates to their daily lives.	The adult introduces general concepts of time (wake-up, eat breakfast, brush teeth, get dressed; yesterday-today-tomorrow; morning-afternoon-evening) before discussing specific concepts (hours & minutes). The environment contains a variety of time-related materials (pictures of night & day, clocks, stop watches, hour/minute glass). The adult encourages the children to informally use and refer to these materials.	Maureen helps the children make a large wall chart divided into thirds. She labels the 3 sections "morning", "afternoon", and "evening". Together, Maureen and the children talk about what happens in each of the time periods. The next day, Caitlin asks, "When can we go outside?" Maureen says, "Let's look at our schedule". She refers to the chart, talks with the children, and then suggests they go to the park, knowing the "puh" p is one of Caitlin's targeted sounds. Together, they add the word "park" in the "afternoon" section.

Standard #5

Building Blocks for Learning	Steps for Getting There	Examples
5-B: Preschool learners begin to use approximate measures of familiar objects (width of your finger, temperature of a room, weight of a gallon of milk) to develop a sense of measurement.	The adult encourages children to practice measuring with non-standard or arbitrary units of measure (feet, hands, paper clips, etc.). The adult talks about measurement concepts during everyday activities - -"It's hot in here today". "Your cup is almost full." "Will this container be big enough for the legos?"	Kajika shows the children how to link ten paper clips together and then use the joined paper clips to measure a wide variety of items. Angela says, "Look my bear is only 4 clips long but Emma's bear is 8 clips long!" Henry laughs as he uses his paper clip strand to measure the length of the room. Carlos gets the yardstick, then runs to Henry and says, "Here, this will be faster." Kajika talks with the children about different ways to measure and helps them make a graph describing what they have found.

Standard #5

Building Blocks for Learning	Steps for Getting There	Examples
5-C: Preschool learners show an increasing awareness of conventional measurement tools and methods.	The environment has measurement tools (rulers, measuring tapes, measuring cups & spoons, clocks, scales) readily available for use by the children. The adult models use of conventional tools and methods in everyday situations.	Elmer is building a tree house for his granddaughter. He asks Abby to bring him the measuring tape, stating "We need to make sure these boards are the correct length". Abby holds one end of the measuring tape while Elmer measures and marks the point where he needs to cut the board.
5-D: Preschool learners become aware of, and use, the conventional language of measurement (inch, mile, hour, degrees, cup, gallon).	The adult uses terms such as inch, foot, minute/hour, cup/quart/gallon, and degrees in informal ways throughout the day. The environment includes many materials with written measurement language—books, charts, posters.	Miss Hou is reading the book Cookadoodle Doo with a small group of children. Together they eagerly discuss the words and measurements used in the book and their different meanings. Miss Hou notices that Simon is having a hard time sitting still. She quickly suggests they make a plan to use the strawberry shortcake recipe from the book to create a dessert for themselves.

Standard #5

Building Blocks for Learning	Steps for Getting There	Examples
5-E: Preschool learners begin to use estimation skills in solving everyday problems.	The adult creates opportunities for children to estimate when measuring, counting, and sharing materials. The adult uses words that signal estimates, such as *about, a little more/less than, near, and between.* The environment contains concrete, meaningful materials for beginning measuring and estimating activities—measuring spoons & cups, quart jars, rulers, yardsticks, etc.	Mrs. Edles is helping Cortez put away the building blocks. She brings out several containers of different sizes and says, "Hmmm, I wonder which of these will be the right size for the Legos. What do you think?" Together, she and Cortez look at the pile of Legos and the containers. They discuss which container will work best.
5-F: Preschool learners begin to recognize, identify, and describe changes in their environment.	The adult builds on daily opportunities and models language to call attention to change (seasonal, growth, temperature) in the environment. The environment includes people, animals, plants, and materials that change, as well as records of those changes.	Bob and Jane take their grandchildren to the zoo once a month. They always make sure to see the Polar Bears and talk about how they have grown since they were born. Jane takes pictures of the children in front of the polar bear exhibit and labels them by the season. She puts the pictures in a scrapbook and talks with the children about how they have grown just like the polar bears.

COLORADO STATE STANDARD 6: Students link Concepts and Procedures as They Develop and Use Computational Techniques, Including Estimation, Mental Arithmetic, Paper-and-pencil, Calculators, and Computers, in Problem-solving Situations and Communicate the Reasoning Used in Solving These Problems.

In order to meet this K-12 standard, students will:

6.1 Model, explain, and use the four basic operations - addition, subtraction, multiplication, and division - in problem-solving situations;
6.2 Develop, use, and analyze algorithms; and
6.3 Select and apply appropriate computational techniques to solve a variety of problems and determine whether the results are reasonable.

Early Childhood Foundation for Standard 6:

In building a foundation for linking concepts and procedures as they develop and use computational techniques, young children need exposure to a wide variety of tools, manipulatives, and active experiences, which, together, set the stage for basic computational concept development. They also need the opportunity to observe adults and peers applying mathematical concepts and using problem-solving techniques and to include these concepts in their play and in adult supported activities. In building the foundation for communicating the reasoning used in solving problems, children need opportunities to hear others describe their reasoning and to respond to questions about their own thinking.

Learning to model, explain, and use the four basic operations in problem solving situations begins with the opportunity for young children to count, sort, and compare groups of objects, describing their thinking and observations. Learning to develop, use and analyze algorithms (step-by-step procedures) begins with following a sequence of directions for activities, experiments and recipes. Learning to select and apply appropriate computational techniques to solve a variety of problems begins with young children using math problem solving strategies in everyday situations.

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Standard #6

Building Blocks for Learning	Steps for Getting There	Examples
6-A: Preschool learners count objects, sorting, organizing and comparing groups of objects.	The environment includes a variety of objects and materials, e.g.: shells, buttons, pegs, to provide each child many opportunities to count, sort, and compare. The adult asks open-ended questions in order to focus children's observations.	Ned is playing with a tin of buttons and has divided them into groups. Mrs. O'Toole points to one of the groups and asks Ned, "How did you decide to put these buttons together?" He uses his communication board to say, "Because they are all shiny!" Mrs. O'Toole offers Ned a muffin tray to help him keep his groups separate.
6-B: Preschool learners begin to develop estimation skills related to quantity.	The adult asks children to estimate number --"How many do you think you have?	Keith put 8 rubber dinosaurs in a jar and asks the children to estimate how many there were. He records their estimate. The children then check their estimates by counting. The next week, Keith puts 10 more dinosaurs in the jar. As the children become more skilled at estimating, he varies the number of the objects.

Standard #6

Building Blocks for Learning	Steps for Getting There	Examples
6-C: Preschool learners participate in hands-on experiences with computational tools, such as calculators, abacuses, adding machines, or computers.	The environment includes tools where they would naturally be used, e.g.: calculators near writing materials and blocks, adding machines in the office, etc. The adult uses computational tools and talks with children about how they are useful.	Hadiyah gets an allowance of $2 a week. She wants to buy a book that costs $10. Her Aunt helps her use the calculator to figure out how many weeks she will have to save her allowance in order to buy the book.
6-D: Preschool learners begin to develop step-by-step procedures for solving problems.	The adult describes their own thinking in step-by-step activities. The adult encourages children to take risks and understand that many problems can be solved in more than one way. The environment is set up to motivate children to challenge themselves and independently solve problems by testing a variety of strategies and solutions.	Justin and Mrs. Lee were making cookies. Justin wanted to make purple frosting so Mrs. Lee gave him the box of food coloring. "There's no purple in here!" said Justin. Mrs. Lee said, "Why don't you try making purple? What colors do you need?" After much experimentation, Justin had created the perfect "purple" color. Mrs. Lee asked him, "How did you get that color". "First I put in 2 drops of red. Then I added one drop of blue. I stirred it up and it still looked red. So then I put in two more drops of blue and then I got purple! It took three drops of blue to make it purple."

Standard #6

Building Blocks for Learning	Steps for Getting There	Examples
6-E: Preschool learners begin to explore the use and meaning of currency and coins.	The adult involves children in using real currency and coins in everyday situations. The adult engages with children as they use currency and coins in pretend play. The environment includes both real and pretend money with props (cash registers, wallets, purses, checkbooks, receipt pads) for their use.	Catalina and Amber have been attending the livestock auction with their family. When they return, they get out papers, markers, and an old checkbook. "Who wants to buy a cow?" Catalina asks. "Amber, do you want to buy this cow for $500?" "Yes!" says Amber, "Let me write you a check." "No, says Catalina, "I will only take real money." Zack talks with the girls about how adults use checks.

Standard #6

Building Blocks for Learning	Steps for Getting There	Examples
6-F: Preschool learners begin to understand and demonstrate the concepts of adding and subtracting.	The adult encourages children to use objects to model and solve simple addition and subtraction problems in meaningful ways. The environment includes a variety of objects and materials that may be used for adding and subtracting.	Mary Kate and Ashley are counting their Beanie Babies. Mary Kate says, "I have 5 bears and 2 cats, that makes 7 altogether." Ashley frowns as she says, "I had 6 dogs, but then I lost Doby at the park last week. Now I only have 5. I'm going to buy Bones when I get my allowance. Then there will be six in my dog family again!"
6-G: Preschool learners begin to understand the concept of whole, parts, and parts that make a whole (fractions).	The adult encourages children to use objects to explore the idea that you can take a whole and break it into parts. The adult models correct language when talking with children, e.g.: part, pieces, whole, half, quarter. The environment includes materials that can be broken into parts and brought back together again, e.g.: pizza, crackers, unit blocks, puzzles.	Noah and Nicholas get out their homemade playdough. Noah says, "We each get half". Just then Meryl walks in and says, "I want to play, too." "You can't because we don't have enough". Demi hears the children arguing and comes into the room. "How can you divide this into three equal pieces? Then you could each have a third."

Bibliography and Resource List

Many educators have worked diligently to create content standards for Early Childhood. We are grateful we were able to refer to these documents while developing ***Building Blocks to Colorado's Content Standards***. We also utilized many of the following books as references and guides. We hope you will find these resources equally useful in your own work with young children.

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